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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/583,147	08/02/2007	Takefumi Yoshida	358362011200	5089

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09/28/2011

EXAMINER
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SALVITTI, MICHAEL A

ART UNIT	PAPER NUMBER
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1767

MAIL DATE	DELIVERY MODE
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09/28/2011

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/583,147	YOSHIDA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	MICHAEL SALVITTI	1767	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 March 2011.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on \_\_\_\_; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 5) ☒ Claim(s) 1,3-5,8,11,13 and 15 is/are pending in the application.
- 5a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 6) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 7) ☒ Claim(s) 1, 3-5, 8, 11, 13, 15 is/are rejected.
- 8) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 9) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____.                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____.  | 6) <input type="checkbox"/> Other: ____.                          |

## DETAILED ACTION

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 10<sup>th</sup>, 2011 has been entered.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 and 3 are rejected under 35 U.S.C. 102(b) as being anticipated by SU 852914 to *Karkozov et al.* as evidenced by *Shinkareva et al.* Russian Journal of Applied Chemistry, Vol. 84 No. 3, 2011.

*For translational purposes, the English translation of SU 852914 made of record on 5/16/2008 is referenced hereinafter.*

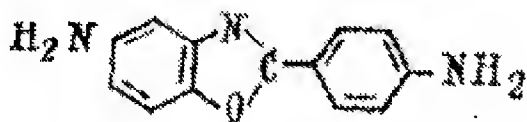
Regarding claims 1, 3: *Karkozov* teaches a curable composition that comprises a continuous phase (interpreted to be the uncured epoxy resin; *Karkozov* page 2, first

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paragraph) and a dispersoid (interpreted to be the ground hardener APBO; *Karkozov* page 2, ¶ 2; page 3, ¶ 2-3).

*Karkozov* teaches the use of resins such as “resin ED-20” (*Karkozov* Table and ¶ 2 on page 6); this epoxy compound is a liquid at ambient temperatures (as evidenced by *Shinkareva*, first paragraph) and has two or more epoxy groups in a molecule (it is a Dian epoxy of 4,4'-isopropylidenediphenol, i.e. a di-epoxy of bisphenol A; *Shinkareva* first paragraph).

The dispersoid in *Karkozov* consists of a compound present as solid particles in a continuous phase at ambient temperatures (cooled to room temperature; *Karkozov* page 3 last sentence). The compound (5-amino-(2-n-amino phenyl)-benzoxazole; APBO) has a benzoxazole structure and contains two primary amino groups (*Karkozov* page 3):



### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over SU 852914 to *Karkozov et al.*, as applied to claims 1 and 3 above, in view of U.S. Patent No. 5,591,814 to *Muroi et al.* as evidenced by *Shinkareva et al.* Russian Journal of Applied Chemistry, Vol. 84 No. 3, 2011 and the instant specification.

Regarding claims 4 and 8: *Karkozov* is silent regarding the further inclusion of an organic solvent having a boiling point of not higher than 200°C. *Muroi* teaches continuous phase epoxy resins containing solid hardener particles, further containing solvents having a boiling point of less than 200°C (examiner takes Official Notice that all of *Muroi*'s solvents in col. 7, lines 32-53 have a boiling point <200°C, as evidenced by the original specification, 7:1-15). *Karkozov* and *Muroi* are analogous art in that they are drawn to the same field of endeavor, namely compositions comprising a liquid epoxy continuous phase and a solid diamine hardener phase, used in adhesive applications. At the time of the invention, it would have been obvious to a person having ordinary skill in the art to add an organic solvent having a boiling point <200°C to the composition of *Karkozov* (such as the solvents used by *Muroi*), with the motivation of increasing the yield (*Muroi* col. 7, lines 45-53): the organic solvents enable the reactants to be dissolved, while allowing the product to precipitate, thereby generating a higher yield for the reaction (*Muroi* col. 7, lines 45-53).

Claims 5 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over SU 852914 to *Karkozov et al.*, as applied to claims 1 and 3 above, in view of U.S.

Patent No. 4,607,069 to *Tesch et al.*, as evidenced by *Shinkareva et al.* Russian Journal of Applied Chemistry, Vol. 84 No. 3, 2011 and the instant specification.

Regarding claims 5 and 11: *Karkozov* teaches introduction of the solid dispersoid having two or more amino groups which is an aromatic benzoxazole (APBO; *Karkozov*) into the epoxy resin in a solid ground form.

*Karkozov* does not state the particle size of the solid APBO particles introduced into the epoxy resin. *Tesch* teaches adding solid aromatic diamine curing agents having particle sizes under 5 microns (*Tesch* col. 2, lines 45-51; interpreted to teach the claimed range with sufficient specificity) to liquid epoxy resins (*Tesch* 2:28; also *Tesch* uses compounds such as bisphenol A diglycidyl ether, which are admitted in the originally filed specification, [4:27-5:23], to be liquid epoxies). *Karkozov* and *Tesch* are analogous art in that they are drawn to the same field of endeavor, namely compositions of continuous phase epoxy resins containing solid diamine curing agents as a dispersoid. At the time of the invention, it would have been obvious to a person having ordinary skill in the art to grind the solid particles of *Karkozov* to 5 microns or less, through routine experimentation, with the motivation of improving the homogeneity of the composition, which allows for uniform filler distribution (*Tesch* col. 1, lines 45-56); *Karkozov* is particular concerned with uniformity (*Karkozov* Example 1) and the inclusion of potential fillers (*Karkozov* page 2, first paragraph).

Claims 13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over SU 852914 to *Karkozov et al.* in view of U.S. Patent No. 5,591,814 to *Muroi et al.*,

as applied to claims 4 and 8 above, further in view of U.S. Patent No. 4,607,069 to *Tesch et al.*, as evidenced by *Shinkareva et al.* Russian Journal of Applied Chemistry, Vol. 84 No. 3, 2011 and the instant specification.

Regarding claims 13 and 15: The combination of *Karkozov* in view of *Muroi* teaches the composition of claims 4 and 8 above. *Karkozov* teaches introduction of the solid dispersoid having two or more amino groups which is an aromatic benzoxazole (APBO; *Karkozov*) into the epoxy resin in a solid ground form.

*Karkozov* does not state the particle size of the solid APBO particles introduced into the epoxy resin. *Tesch* teaches adding solid aromatic diamine curing agents having particle sizes under 5 microns (*Tesch* col. 2, lines 45-51; interpreted to teach the claimed range with sufficient specificity) to liquid epoxy resins (*Tesch* 2:28; also *Tesch* uses compounds such as bisphenol A diglycidyl ether, which are admitted in the originally filed specification, [4:27-5:23], to be liquid epoxies). *Karkozov* and *Tesch* are analogous art in that they are drawn to the same field of endeavor, namely compositions of continuous phase epoxy resins containing solid diamine curing agents as a dispersoid. At the time of the invention, it would have been obvious to a person having ordinary skill in the art to grind the solid particles of *Karkozov* to 5 microns or less, through routine experimentation, with the motivation of improving the homogeneity of the composition, which allows for uniform filler distribution (*Tesch* col. 1, lines 45-56); *Karkozov* is particular concerned with uniformity (*Karkozov* Example 1) and the inclusion of potential fillers (*Karkozov* page 2, first paragraph).

Claims 1, 3, 5 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,607,069 to *Tesch et al.* in view of SU 852914 to *Karkozov et al.*

*This is an alternative rejection to the rejection under 35 U.S.C. § 102(b) to Karkozov above, in the instance that the as “resin ED-20” does not have two epoxy groups and/or is not liquid at ambient temperatures. For translational purposes, the English translation of SU 852914 made of record on 5/16/2008 is referenced hereinafter.*

Regarding claims 1 and 3: *Tesch* teaches a curable composition (Abstract) comprising a continuous phase (an epoxy resin) and a dispersoid (particulate curing agent) at ambient temperatures (*Tesch* 5:5-7). *Tesch* teaches continuous phases that are liquid at ambient temperature (*Tesch* 2:28) and contain two epoxy groups, for example bisphenol A diglycidyl ether, which is taught in the instant application to be liquid at ambient temperature (page 6, lines 2015). The dispersoid of *Tesch* consists of aromatic compounds present as solid particles (a finely divided powder; *Tesch* 2:43-66) that have two primary amino groups (see structures; *Tesch* 3:1-30).

*Tesch* is silent regarding the aromatic diamine curing agent having a benzoxazole structure. *Karkozov* teaches aromatic diamine curing agents having a benzoxazole structure (e.g. APBO; *Karkozov* page 4, Example 1). *Tesch* and *Karkozov* are analogous art in that they are drawn to the same field of endeavor, namely compositions having a continuous epoxy resin and aromatic diamine hardeners dispersed therein. At the time of the invention, it would have been obvious to a person having ordinary skill in the art to substitute the aromatic diamine hardener of *Tesch* for



the aromatic benzoxazole diamine hardener of *Karkozov*, with the motivation of improving the pot-life and high temperature resistance (*Karkozov* page 4, lines 1-5).

Regarding claims 5 and 11: *Tesch* teaches that the solid particles have a volume average particle size of under 5 microns (*Tesch* col. 2, lines 43-50 and col. 4, lines 30-40). Under 5 microns has been interpreted to teach applicants' claimed range with sufficient specificity.

Claims 4, 8, 13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,607,069 to *Tesch et al.* in view of SU 852914 to *Karkozov et al.*, as applied to claims 1 and 3 above, further in view of U.S. Patent No. 5,591,814 to *Muroi et al.*

Regarding claims 4 and 8: *Tesch* teaches the addition of solvents (*Tesch* col. 3, lines 55-60).

However, *Tesch* is silent regarding the addition of organic solvents having a boiling point of less than 200°C. *Muroi* teaches solvents having a boiling point of less than 200°C (examiner takes Official Notice that all of *Muroi's* solvents in col. 7, lines 32-53 have a boiling point <200°C, as evidenced by the original specification, 7:1-15) which are used to disperse difunctional epoxy resins containing solid phase dispersoid curing particles. *Karkozov* and *Muroi* are analogous art in that they are drawn to the same field of endeavor, namely compositions comprising a liquid epoxy continuous phase and a solid diamine hardener phase. At the time of the invention, it would have been obvious to a person having ordinary skill in the art to add an organic solvent having a

boiling point <200°C to the composition of *Karkozov* (such as the solvents used by *Muroi*), with the motivation of increasing the yield by enabling the reactants to be dissolved, while the product precipitates, thereby enabling higher yield of the reaction (*Muroi* col. 7, lines 45-53).

Regarding claims 13 and 15: *Tesch* teaches that the solid particles have a volume average particle size of under 5 microns (*Tesch* col. 2, lines 43-50 and col. 4, lines 30-40). Under 5 microns has been interpreted to teach applicants' claimed range with sufficient specificity.

### ***Response to Arguments***

The following responses are directed to the document entitled "Remarks" (pages 4-6) received March 10<sup>th</sup>, 2011.

Applicant's arguments with respect to the rejection of claims 1, 3-5, 8, 11, 13 and 15 under 35 U.S.C. § 103(a) over *Muroi* (USPN 5,591,814) in view of *Karkozov* (SU 852914) have been considered but are moot in view of the new ground(s) of rejection.

In view of amendment, the rejection of *Muroi* in view of *Karkozov* has been withdrawn.

However, upon further search, it appears that the resins (e.g. ED-20) used by *Karkozov* are liquid diepoxy resins (see *Shinkareva* evidentiary reference), necessitating anticipation of claims 1 and 3 by *Karkozov*. The features of claims 4-5, 8, 11, 13 and 15 such as the claimed solid particle size and the inclusion of organic solvents are recognized in the art and addressed by the rejections above.

***Prior Art***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892.

***Correspondence***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL SALVITTI whose telephone number is (571)270-7341. The examiner can normally be reached on Monday-Thursday 8AM-7PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on (571) 272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Liam J Heincer/  
Primary Examiner, Art Unit 1767

/M. S./  
Examiner, Art Unit 1767